

In the Claims:

This listing of claims replaces all prior versions and listings of claims:

1. (Currently amended) A solid-state imaging apparatus comprising:

a pixel array, said pixel array comprising a plurality of pixels in a two-dimensional array;
a pixel-array scanning circuit that scans the pixel array to read analog signals from the individual pixels and outputs said analog signals to an AD (analog to digital) memory, wherein

the AD memory comprising is separate from the pixel array and comprises

a plurality of unit memories in a two-dimensional array corresponding to a pixel arrangement in the pixel array for storing said analog signals,

each unit memory including stores a respective analog signal from a corresponding individual pixel and includes an analog to digital converter circuit, and

each said analog to digital converter circuit producing produces a converted digital signal by carrying out analog to digital conversion on a stored analog signal; and

a memory scanning circuit for scanning the AD memory and outputting the converted digital signals from the individual unit memories.

2. (Previously Presented) The solid-state imaging apparatus according to claim 1, further comprising an output unit that processes the digital signals output from the memory scanning circuit and outputs the processed signals out of the apparatus.

3. (Original) The solid-state imaging apparatus according to claim 1, wherein the individual pixels in the pixel array correspond to the individual unit memories in the AD memory in a one-to-one relationship.

4. (Original) The solid-state imaging apparatus according to claim 1, wherein the individual pixels in the pixel array correspond to the individual unit memories in the AD memory in an N-to-one relationship wherein $N \geq 2$.

5. (Canceled)

6. (Original) The solid-state imaging apparatus according to claim 1, wherein AD conversion is simultaneously carried out for all the unit memories in the AD memory.

7. (Original) The solid-state imaging apparatus according to claim 1, wherein the signals are read from the pixel array to the AD memory pixel row by pixel row, and AD conversion is simultaneously carried out for all the unit memories in the AD memory.

8. (Original) The solid-state imaging apparatus according to claim 1, wherein the unit memories comprise DRAMs.

9. (Currently amended) A solid-state imaging apparatus comprising:

a pixel array, said pixel array comprising a plurality of pixels in a two-dimensional array; and

an AD (analog to digital) memory, separate from said pixel array, for storing analog signals read from the pixel array and carrying out AD conversion on said analog signals, the AD memory comprising a plurality of unit memories in a two-dimensional array corresponding to a pixel arrangement in the pixel array, each unit memory including an analog to digital converter circuit, and the plurality of unit memories carrying out AD conversion on signals from at least two rows of pixels simultaneously.

USSN: 10/670,522

Amendment dated July 2, 2009

Reply to final Office Action of April 28, 2009

10. (Previously presented) The solid-state imaging apparatus according to claim 9, wherein the plurality of unit memories simultaneously AD convert signals that are obtained by combining signals read from the pixel array.

11. (Previously presented) The solid-state imaging apparatus according to claim 9, wherein the unit memories carry out noise removal and AD convert the signals from the pixel array.